



*Poirier MJP, Hard J, Holst J. COVID-19 pandemic providing a window of opportunity for higher education: Case study of a three-country teaching-learning experience. (Original research). SEEJPH 2021, posted: 15 November 2021. DOI: 10.11576/seejph-4924*

## ORIGINAL RESEARCH

# COVID-19 pandemic providing a window of opportunity for higher education: Case study of a three-country teaching-learning experience

**Mathieu JP Poirier<sup>1</sup>, Julie Hard<sup>2</sup>, Jens Holst<sup>3</sup>**

<sup>1</sup> School of Global Health, York University, Toronto, Canada;

<sup>2</sup> Faculty of Health, York University, Toronto, Canada;

<sup>3</sup> Department of Nursing and Health Sciences, Fulda University of Applied Sciences, Fulda, Germany.

**Corresponding author:** Jens Holst;  
Address: Leipziger Str. 123, 36037 Fulda, Germany;  
E-mail: [jens.holst@pg.hs-fulda.de](mailto:jens.holst@pg.hs-fulda.de)

## Abstract

**Aim:** Since March 2020, the COVID-19 pandemic has been causing unprecedented challenges to higher education by disrupting traditional face-to-face teaching as well as international mobility of students, faculty and staff. The factual knock-out of established modes of teaching and learning and the restriction of international travel called for rapid action and a shift towards remote learning and teaching.

**Methods:** Within the framework of a pragmatic approach, global health faculty from Fulda University of Applied Sciences in Germany and York University in Canada, including a small group of public health students from Cluj in Romania, established a globally networked learning environment. Between November and December 2020, a total of 147 students participated in joint virtual lectures and international collaborative group projects. To capture the acceptance and effectiveness of the innovative didactic experience, a semi-structured student survey was conducted directly after the last session.

**Results:** The overall rating of internet-based cross-university teaching-learning was positive: Students reported benefits of an enriched learning experience through the sharing of different perspectives, approaches and debates with international professors and peers. Success and overcoming challenges for collaboration among students depended strongly on the level of coordination relating to time differences and expectations.

**Conclusion:** The COVID-19 pandemic has revealed that transnational inter-university teaching-learning is feasible, provides a beneficial pedagogic option and points promising ways to the future.

**Keywords:** COVID-19, higher education, learning, teaching.

**Conflict of interest:** None declared.

**Acknowledgements:** We gratefully acknowledge the contributions of Prof. Dr. Kai Michelsen and Prof. Dr. Marius I. Ungureanu to the development of the three-country teaching-learning experience.

## Background

The outbreak of the COVID-19 pandemic led to physical closures of higher education institutions around the world. The sudden pivot from in-person to online education disrupted usual procedures of university education. The global suspension of traditional ways of lecturing posed unprecedented challenges to both teachers and students. At the same time, it opened a window of opportunity for innovative pedagogic approaches and techniques, including real-time cross-university exchange and active student cooperation. These pandemic measures have significantly intensified efforts and reduced reservations about the cost implications of cross-border teaching-learning and joint education. Without a doubt, the near universal shift to online learning also lowered the barriers to inter-university teaching and exchange. Previously, sharing in-person teaching by coordinating sessions taking place in two or more classrooms with students physically present required the classes to be connected using one or more remote lecture halls where groups of students were present. The physical distance tended to cause different learning conditions between students physically attending the lecture and those who were connected via video stream, because the latter had more indirect contact to the teachers and limited possibilities to interact with them (1).

Mobility and internationalisation have been heavily affected by the pandemic and the measures taken to prevent the spread of the virus. As early as March 2020, almost two-thirds of European universities observed a negative impact on their outgoing student mobility (2). Internationalisation as an objective and strategic agenda has certainly not diminished in importance, but its implementation has clearly transformed in the short- to medium-term (3). These impacts have affected York University in Toronto, Canada, and, Fulda University of Applied

Sciences in Fulda, Germany in different ways. The following paragraphs describe the impacts with reference to examples from Bachelor of Public Health programmes.

The pandemic posed some structural challenge for York University's (YU) newly established School of Global Health, but the opportunities for internationalisation and expansion of experiential education proved to be powerful incentives to embracing new pedagogic approaches. Students in York University's Bachelor's programme in Global Health that choose to enrol in the Specialized Honours degree options have the possibility to participate in an international internship placement, but most students either refrain from participating in this programme or select domestic options for practical, financial, or academic reasons. Once all courses were transitioned to an online format as of March 2020 and subsequent restrictions on travel were put in place, students that had hoped to participate in an international internship placement faced the possibility of being prevented or even prohibited from doing so, and students from all degree options raised concerns that online learning would reduce experiential learning opportunities. In fact, a November 2020 poll conducted by the Ontario Confederation of University Faculty Associations indicated that the quality of educational experience was the top concern of students in Ontario, even outranking other financial, mental health, and safety concerns (4).

COVID-19 turned out to be a bit more challenging for Fulda University of Applied Sciences (FUAS) because it hit the university in two recent development areas. The first lockdown occurred during the initial phase of the implementation of a publicly funded internationalisation project. In October 2019, the university's department of Nursing and Health Sciences (PG) had ob-

tained considerable funding from the German Academic Exchange Service (DAAD) for promoting the internationalisation of the department and the university as a whole. The majority of funds were planned for and assigned to the exchange of students, faculty, and other staff from and to Fulda in order to build a network of university and practice partners in Europe and worldwide. As traveling became widely impossible from March 2020 onwards, the project staff had to look for other possibilities and pathways towards an enhanced international partner network and increased international exchange opportunities and facilities.

Simultaneously, COVID-19 restrictions of in-person teaching of all courses and particularly the wide-ranging limitations of travel were put in place just as the first cohort of the newly established Bachelor's programme International Health Sciences (IHS) was preparing and embarking on their compulsory semester abroad, which is regularly scheduled in the third year of the degree programme. Approximately 75% of the students had to postpone their semester abroad, leading faculty to provide the content of the subsequent semesters half a year earlier than foreseen in the curriculum. The need to offer international education, training and internships under the conditions of COVID-19 called for action to minimise the negative consequences of lockdowns and travel restrictions and take advantage of the potential positive opportunities for international exchange. Developing, setting up and testing innovative teaching and learning methods became an urgent need in order to allow students to finalise their study programmes within the standard period and reduce the negative impact of the pandemic on their training and education. Institutional support is obviously required but increasingly taken into account by pertinent organisations (5). This paper describes the process of developing, piloting,

and evaluating a globally networked learning environment between two universities in Germany and Canada, with the participation of some guest students from Romania.

## Method

Building on cooperation between FUAS and YU since 2019, faculty from both universities started to explore options of collaborative teaching approaches for selected courses. It should be noted that the two universities offer quite similar Bachelor's programmes on International Health Sciences (FUAS) and Global Health (YU), respectively. Student exchange was initiated with Canadian students conducting an internship in Germany and extended student exchange was planned for 2020 and beyond but had to be put on hold under the COVID-19 pandemic. The above-mentioned change in the timing of semester programming at Fulda University resulted in a possibility to collaborate in the field of global health policy courses. Specifically, a Fulda course called "Global Health Policy and Politics" and a York course "Global Health Policy: Power and Politics" exhibited concordance and consistency in course learning outcomes and content. This led the faculty to explore the potential to include joint lectures and learning opportunities for students from both universities. Months of regularly scheduled calls over the summer of 2020 resulted in an agreement to establish jointly delivered virtual lectures in a three-week span of overlapping weekly courses. In addition, students were invited to work collaboratively in joint working groups dealing with "hot" topics related to the policy response to COVID-19. At a later stage, a small group of public-health students from Babeş-Bolyai University (BBU) in Cluj-Napoca, Romania, joined the international group exercise of the German-Canadian inter-university teaching-learning project. Cross-cohort and -university teaching took place in November and December 2020

with a total of 147 students - 93 from YU, 36 from FUAS, and 18 from BBU. Three topics covered were deemed highly relevant for global health and global health policy: “Global trade policies and international cooperation regarding health” and “European Union health and social policies”, both delivered by Fulda faculty (JH1& KM), and “Policy process: democracy, activism, and the battle of interests”, taught by York University faculty (MP). These topics were not country- or region-specific, but provided excellent opportunities to point out different focuses and perspectives. The international group project consisted of matching students between universities to collaboratively develop a policy brief and supporting

podcast, narrated presentation or any other multimedia product comparing policy responses to COVID-19 and proposing policy solutions to a range of pressing issues such as mitigating the medical, social, and economic impact of the pandemic, analysing social, economic, racial, ethnic, and gender inequities, and implementing protective measures in schools, businesses, and public spaces. To keep things manageable, only binational working groups were established. Due to the different cohort sizes, the allocation resulted in nine Canadian-German and four Canadian-Romanian working groups consisting of between 10 and 12 students each.

**Table 1. List of potential topics for collaborative student group projects**

Acceptance (and denial) of COVID-19 measures	To what degree has the public accepted governments’ and scientists’ response to the pandemic, and how has this evolved since the start of the outbreak?
Decentralisation and the COVID-19 response	What level of government has taken the lead in the response to the pandemic? Have there been conflicts between local, state/provincial/regional, and federal governments?
Employment opportunities / unemployment	How severe have changes in employment been? What existing, new, and expanded programs have been implemented to reduce unemployment?
Global health	Effects of the pandemic outbreak on global health and global health politics. How has the corona crisis influenced the prevailing global-health debate?
Impact on education	What policies have schools implemented to protect students, teachers, and staff at the primary, secondary, and university levels?
Protective measures	What measures have been implemented to protect public health or public’s health, and how have these measures been relaxed or strengthened throughout the pandemic?
Public information / media	Who is responsible for communicating government public health and policy information to the public, and what is the role of media in disseminating this information?
Regulation of mobility	What measures have been put in place to monitor and restrict international and domestic travel?
Social impact and inequality	What social, economic, racial, ethnic, or gender inequities have emerged or widened?
Social protection	Has social protection proven to be able to mitigate the medical, social and/or economic impact of the pandemic?
Socioeconomic inequalities	When, by whom and to which extent have inequities/inequalities been addressed during the COVID-19 crisis?

---

Choose your own topic      If you are passionate about a global health topic not listed above, you can propose your own (must be approved by course director)

---

The array of tasks ranged from analysing measures to control COVID-19 in the health sector to their impact in other policy areas (see Table 1). The organisation and facilitation of the inter-university group work relied heavily on the students themselves who had the chance to choose between different internet-based communication and social media platforms. York University students were prepared for the project by developing a group project plan to actively anticipate barriers to effective collaboration such as language, cultural difference, and time zones, and prepare a plan for how to overcome those barriers. Student group work was also supported by faculty feedback provided to each mixed student group in scheduled video calls. Due to the staggered course schedule, Fulda students had the opportunity to present their jointly developed products with Canadian students within their own group, to discuss them critically and to obtain feedback from the teachers. Finally, student perceptions were gathered in the final weeks of cooperation by York University International Relations (JH2) as an independent third party to motivate unbiased and honest feedback.

## Results

In the overall view of lecturers involved, inter-university and cross-country teaching offers an excellent opportunity to broaden the scope of content, reach a more diverse student audience, and learn from inter-cultural differences. Particularly in the field of health policy, and even more in international and global (health) policy, exchange between different country perspectives turned out to be enlightening and provided the courses with extraordinary added value for all participants.

Students pointed out that they had learned how to collaborate and organise group work

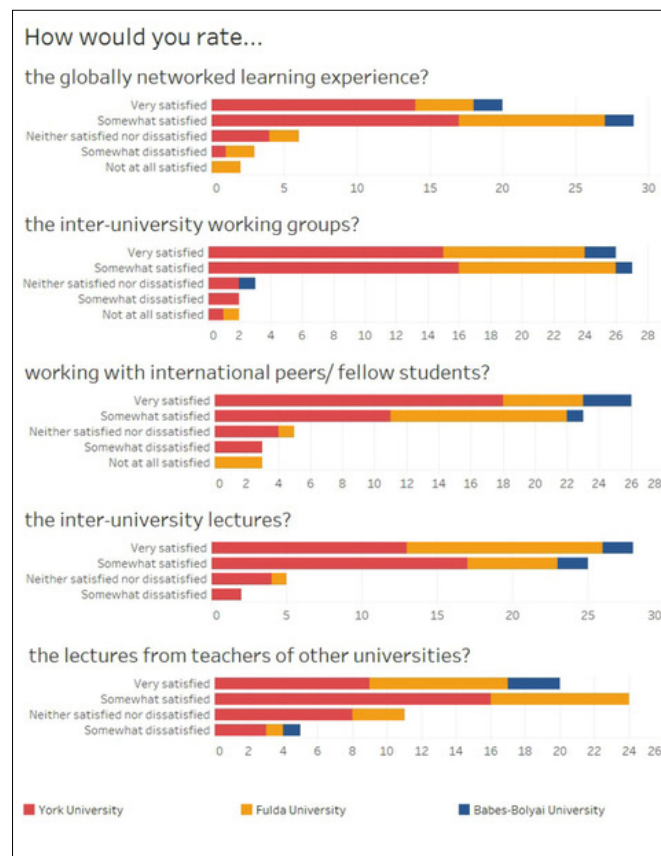
with a larger number of people. Canadian students particularly appreciated the opportunity to get an insight into other healthcare systems and how other governments tackled the COVID-19 issues from a first-hand experience perspective. Regarding didactic requirements, staff experiences gathered during the relatively short phase of inter-university teaching underpinned the need to provide students with timely feedback, including online video tutoring and email guidance after and between classes and to adopt measures to improve the degree and depth of students' class participation described elsewhere (6).

Another critical determinant of student engagement appeared to be whether participation and contribution to the collaborative group project was required and marked for course credit. Students indicated a greater willingness to attend guest lecture exchange and actively contribute to group work if they knew the work would be formally evaluated. For ensuring that all students communicate with each-other and start working on their assignment, students expect all professors to clearly express the conditions and requirements of the joint teaching-learning project. And of course, the individual student experience depended very much on the group constellation and the commitment of peers and other group members. Fulda and York University found ways to integrate the jointly taught course elements into their grading systems. For Fulda students, the incentive was twofold: Faculty informed the students before the inter-university sessions that about 25% of the term paper to be submitted at the end of the semester were dedicated to a brief description as well as a critical analysis and evaluation of the joint group work; in addition, the active and proven participation in the joint group work was rewarded with a

0.3 bonus of the final grade (based on the German grading systems between 1 (best) and 5 (failed) with one-third steps. York University students were first required to prepare a group project plan worth 5% of the final mark, anticipating and planning to overcome barriers to effective collaboration prior to the start of the exchange. The international collaborative project was evaluated on a group-by-group basis out of a total of 21% of the final mark, with adjustments based on individual contributions reported in a group progress report. Finally, a writing activity completed at the end of term prompted students to reflect on challenges and areas of growth spurred by the ex-

change, and the final exam contained questions based on lectures delivered in all three weeks of shared teaching. After finalising the inter-university lectures and the mixed working groups, students were invited to participate in an anonymous survey conducted by a third party (York International) to explore the impact of the innovative learning experience. Approximately 41% of the students participated in the survey, with 4 out of 18 BBU students, 20 out of 36 from FUAS and 36 out of 93 from YU participating, for a total of 60 out of 147 students who attended the sessions. Students were asked about overall impressions of the course, challenges to overcome, and ways their learning was enriched.

**Figure 1. Student ratings of various aspects of the Globally Networked Learning Environment divided by university of respondent**



All in all, 55 out of the 60 students surveyed indicated that they would be interested to participate in a similar experience in the future. Figure 1 summarises the ratings of the

overall intercontinental networked learning approach, inter-university working groups, working with fellow students, inter-university lectures, and lectures delivered by

teachers from other universities. Student satisfaction was consistently high, ranging from a low of 73% for lectures of teachers from other universities and a high of 88% for inter-university lectures and the inter-university working groups. Students particularly welcomed the variety of teaching and the opportunity to meet new people as a nice change after having started feeling fatigue over the redundancy of online schooling.

Students were asked to comment on areas they felt the learning format and experience worked well. Recurring comments revealed student appreciation for the online lecture format provided by different professors, the opportunity to hear different perspectives on topic areas, and the process of collaboration with international students. Personalised feedback and assignments reportedly allowed for enjoyable and creative opportunities to develop teamwork and organizational skills in a virtual international context. Students appreciated the chance to meet with the professors, discuss the progress of group works and get personalised feedback. The combination of the policy brief and a more creative multimedia product as group work result was highly appreciated.

Some notable limitations included overcoming the time difference of 6-7 hours between Toronto and Germany / Romania, respectively. Time differences challenged students to find mutually agreeable times to coordinate international group work on assignments. Students were additionally critical of the size of each working group indicating groups were too large, further compounding coordination challenges, and reportedly permitted variability in participation among its members. One of the greatest challenges derived from the need to work with students in different time zones and make sure everyone is able to attend meetings and carry their weight of the work.

Lecture duration and delivery times were felt to be too long, inconvenient, and too late in the evening for some students. In the future challenges related to time and time differences could be overcome by recording asynchronous sessions; however, this would reduce the interactivity and liveness of lectures that were highly valued by students who also expressed the desire to apply cross-university approaches when school move back to face-to-face teaching in order to be able to further benefit from inputs of lecturers and students from other universities.

Issues related to coordinating over several platforms for video conferencing (Webex, Zoom) and communication and file sharing (email, WhatsApp, Slack, Google) were relatively minor, with lectures being held over Webex and leaving other communications and file sharing decisions to each student group. Some students complained that particularly in the beginning it was a bit challenging organising how to work together and where to share findings and contributions; however, it turned out to be really easy to connect directly and stay in contact, as well as working together on a document or presentation via Whatsapp, Zoom, shared Google Docs, etc. Even though students were unable to meet physically with their international peers, several expressed that the online experience helped with providing a "real-life" simulation of what it may feel like to collaborate with international colleagues. The process simulated the very real challenges related to coordinating between different time zones, technologies, languages, and cultures that is inherent to working in the field of global health. This intercultural exchange was also highlighted as one of the most rewarding aspects of the experience, with different approaches to teaching, learning, collaborating, and policy analysis ultimately enriching the collaborative experience of working with students around the same age group,





understanding how life after COVID-19 has changed for young people and learning the differences and similarities between their experiences in school and life in general. The experience of meeting new people and communicating with them was evaluated as pleasant because students perceived themselves mutually as very open.

### Discussion

COVID-19 has been a huge challenge for higher education, and universities were forced to develop strategies for safeguarding adequate learning and teaching. Inter-university and cross-border had already been implemented earlier in various settings and generated an overwhelmingly positive reception among lecturers and faculty (7). Prior research has shown both opportunities and barriers of inter-university cooperation arising from the heterogeneity of the participants and different perspectives on the topics covered beyond group dynamics issues, trust, and technical as well as facilitation challenges (8). Recent evidence suggests that under COVID-19 restrictions, online and remote teaching-learning helps students follow the lessons outside the classroom and create an alternative to in-class teaching for completing the syllabus (9). It turned out to be helpful that students did not face major issues in terms of communication and level of knowledge, although some did differ in discipline with regards to punctuality in research and scheduled meetings. Online learning requires higher than usual commitment from students, and both students and lecturers are required to develop and implement innovative approaches for making higher education successful. At the same time, online teaching opens unprecedented opportunities for students to co-design activities and assessments, creating improved opportunities to making them co-producers of their learning. The fact that it is easier to shape

the format of live sessions according to students' needs and regular feedback can help universities make students participate more proactively in directing the course of their learning. Students were able to directly and mutually explore how policies and norms in daily life differ between countries, and some of the even perceived a bit of a culture shock.

Of course, this case study has certainly some limitations. Due to the rapid and unforeseeable development of external circumstances during the COVID-19 pandemic, our cooperation had to be planned and organised at very short notice. Under these conditions, the participating lecturers had to opt for a pragmatic approach without a prior test run or in-depth planning. Likewise, the survey to explore the impact of the innovative learning experience, which was conducted shortly after the lectures and joint group work, was descriptive in nature and applied without a pre-test. The fact that the lecture periods of the participating universities only partially overlapped put additional timely pressure on the implementation of the internet-based cross-university teaching-learning experience. Moreover, the fact that this case study is limited to two global health courses and a relatively small number of participants reduces the generalisability of the described teaching-learning experiment under pandemic conditions.

While the potential to make students act increasingly as partners in their education looks tempting, it should not be overstretched. Even in online teaching via video chat, the commitment and active enrolment in the education depends more on individual conditions than in face-to-face teaching. It is easier and less risky for students to (partly) pull out of the sessions and hide behind the anonymity of online teaching. This applies mainly to larger cohorts which do not allow a direct supervision of all participants at the time. Moreover, concurrent experience shows that the ability of students

to follow lectures, to actively work on the material and, above all, to actively participate in the lessons, shows even greater differences in online teaching than in face-to-face teaching. Inter-university online teaching does not only have to take into account this general condition but be aware of greater differences within and between the different cohorts. In the teaching experience of York and Fulda Universities, the attitude, commitment and participation did not show discernible differences between students enrolled in Canadian and German higher education; however, Romanian students were less visible what might be attributable to their low number and the role of guest students. Students noticed differences in the teaching and research focus and priorities. For example, Canadian students were more focused on statistics whereas students from Germany were more focused on a holistic understanding of the topic. Nonetheless it has to be stressed that the more different teaching-learning habits and cultures are, the more challenging it will be to assure equal possibilities and opportunities for all participants. Online learning has certainly an equalising potential, as both lecturers and all students attend online sessions from their homes in order to adjust to the realities imposed by the pandemic outbreak. However, inequality remains an important issue for concern. Availability of adequate hardware equipment, internet connectivity, supportive social integration and individual contacts remain critical topics that challenge equality of opportunities for students. Hence, for preparing joint inter-university sessions and working groups, the faculty of the academic institutions involved are strongly recommended to exchange about teaching-learning strategies, didactic approaches and practical experiences in order to be prepared and capable to adequately respond to the needs and habits of the different student cohorts. As a matter of fact, differences in language fluency

have to be taken into account for preventing misunderstandings as well as insecurities in joint group works.

Online teaching-learning relies heavily on internet connectivity and the technical equipment available to teachers and especially students. Although coverage of reliable internet connections varies in Germany and offer room for improvement particularly in rural areas, technical problems on students' side were negligible. In the Toronto region internet connectivity is very good overall and allowed students to follow the joint sessions and perform in the joint group work. For Romanian students, the technical conditions were also sufficient and did not cause major problems. However, one has to be aware that online inter-university teaching learning is likely to be more challenging with academic partners located in low-income or other countries where internet connectivity is unstable; additional challenges might arise if power supply is unreliable. Beyond the general framework conditions, differences in technical equipment are also very likely to play a role. If students depend on smart phones instead of computer or laptops, knowledge transfer via presentations is seriously hampered, and participation severely limited. Hence, reliable power and internet supply as well as adequate technical equipment are indispensable for making inter-university higher education effective, enjoyable and successful. Making all lecture recordings available is considered crucial for cross-university teaching-learning as it allows students repeating innovative or complicated topics; copyright issues have to be sorted out, and teachers are highly recommended to make their inputs accessible for students living in time zones where it is difficult to follow the live session and for all others who want to work the topic more in depth.

One of the challenges which is highly relevant for students is the question of how to

include inter-university learning-teaching into the regular schedule and especially the given grading and assignment conditions, which may differ from one university to another. It is worth mentioning that most students were motivated to attend the inter-university lectures and committed to contribute to the mixed working groups, although the impact of the joint sessions and working groups as part of the course assignment and grading was limited. This suggests that the primary motivation can be sufficiently strong for students at the different universities involved to broaden their perspectives and get to know other faculty and students. Moreover, compared to traditional examinations with a focus on recalling information rather than exploring a topic, putting together policy briefing papers, and recording podcasts, videos, narrated Powerpoint presentations or other multimedia products require and reward curiosity and academic inquiry. In a nutshell, inter-university online teaching-learning modes adopted by York and Fulda University, with partial involvement

of Babes-Bolyai University during the COVID-19 adversity have proven to be very promising for both, intellectually enriched opportunities particularly on the field of global health and for further future academic cooperation. In fact, they are already being replicated in similar formats, and further online teaching-learning activities are being prepared. Institutional conditions and arrangements are increasingly being adjusted to the new needs and promising to lower the barriers of implementing fruitful cross-university teaching-learning cooperation (5). These promising approaches help overcome the persisting restrictions in real-life internationality and globality due to the ongoing and prolonged pandemic. If one of the lessons to be learned from COVID-19 is a critical validation of physical travel needs, online inter-university teaching and learning exercises have the potential to anticipate the future and prepare students for the working conditions in the field of global health in the next decades.

## References

1. Lamba P. Teleconferencing in Medical Education: A Useful Tool. *Australas Med J* 2011;4:442-7. DOI: 10.4066/AMJ.2011.823.
2. European University Association. European higher education in the Covid-19 crisis. Brussels: 2020. Available from: [https://eua.eu/downloads/publications/briefing\\_european%20higher%20education%20in%20the%20covid-19%20crisis.pdf](https://eua.eu/downloads/publications/briefing_european%20higher%20education%20in%20the%20covid-19%20crisis.pdf) (accessed: August 5, 2021).
3. de Wit H, Altbach PG. Internationalization in higher education: global trends and recommendations for its future. *Policy Rev High Educ* 2020;5:28-46. DOI: 10.1080/23322969.2020.1820898.
4. Ontario Confederation of University Faculty Associations. OCUFA 2020 Study: COVID-19 and the Impact on University Life and Education. Toronto; 2020. Available from: <https://ocufa.on.ca/assets/OCUFA-2020-Faculty-Student-Survey-opt.pdf> (accessed: August 17, 2021).
5. German Rectors' Conference (HRK). Effective framework conditions for teaching and learning. Resolution of the 147<sup>th</sup> Senate of the HRK on 16 March 2021. Berlin; 2021. Available from: <https://www.hrk.de/fileadmin/redaktion/hrk/02-Dokumente/02-01-Beschluesse/2021-03->

- 16\_HRK-S-Entschliessung\_Eckpunkt Papier\_EN.pdf (accessed: July 20, 2021).
6. Bao W. COVID-19 and online teaching in higher education: A case study of Peking University. *Hum Behav Emerg Tech* 2020;2:113-5. DOI:10.1002/hbe2.191.
  7. Poulková P, Šimonová I. Borderless Education: InterUniversity Study – Tutors’ Feedback. *Procedia Soc Behav Sci* 2015;171:1185-93. DOI:10.1016/j.sbspro.2015.01.230.
  8. Činčera J, Mikusiński G, Binka B, Calafate L, Calheiros C, Cardoso A, et al. Managing Diversity: The Challenges of Inter-University Cooperation in Sustainability Education. *Sustainability* 2019;11:5610. DOI:10.3390/su11205610.
  9. Mishra L, Gupta T, Shree A. Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *Int J Educ Res Open* 2020;1:100012. DOI: 10.1016/j.ijedro.2020.100012.

---

© 2021 Poirier et al; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.